

REMARKS

Claims 1, 47-64, 70, 74-81, 74-81, 86-97, 99, 100, 103, 104 and 114-127 are currently active.

The Examiner has objected to the drawings. The drawings have been amended to obviate this rejection. Replacement sheets of the drawings are enclosed. Formal drawings will be provided when the application is allowed. The Examiner objects to the drawings because the Examiner is of the position that various reference characters designate the same item. A replacement sheet regarding figure 1a is attached with this Response having changes to better clarify the various reference characters.

In regard to reference characters 228 and 14, reference character 228 refers to the pressure control while character 14 is a subset of character 228 and is the CO2 control specifically.

Reference characters 24 and 222 have had their lines to which they extend amended.

Reference character 32 is associated with the camera, while reference character 214 is associated with the port that the camera fits in. Their lines have been corrected accordingly.

Reference character 216 refers to the environment control, while reference character 16 is a subset of this and refers to the tank. Their lines have been corrected accordingly.

Reference character 30 refers to the joystick, while reference character 224 refers to the movement capability generally, of which the joystick is a subset. Their lines have been corrected accordingly.

The Examiner has objected to the disclosure. The numeral 230 appears in the drawings. In regard to the robotic mechanism 230 not appearing in the drawings, a replacement sheet of figure 4b now having 230 was provided in the previous amendment. Another copy of this replacement sheet is attached with this Response in the event the Patent Office misplaced it.

The Examiner objects to Claims 94, 96 and 103 as being improperly dependent. It is respectfully submitted these claims are properly dependent. Applicants respectfully

traverse this objection. All of these claims depend on Claim 124. Claim 124 is active, and it is intended that these three claims depend on Claim 124.

The Examiner has rejected Claims 1, 47-64, 70-81, 86-97, 99, 100, 103, 104, 124 under 35 USC 112, second paragraph. As requested by the Examiner, the term "mechanism" was changed to -- means -- in the last Amendment.

The Examiner indicates that the "means for individually controlling," "means for automatically determining" and "means for individually tracking and identifying" needs to have identified the corresponding structure in the specification.

In regard to the "means for automatically tracking and identifying," it should be noted that the claims, such as Claim 57, already have the further limitation that the tracking and identifying means includes a computer for automatically tracking and identifying division and differentiation of said individual cell from a plurality of cells over time. In addition, the tracking and identifying means can include a microscope mechanism 220 and a camera mechanism 222 that takes pictures through the microscope mechanism 220 and provides the pictures to the computer. There is also the X-Y translation plate which moves any well of the 96 well plate over the objective so that the cells in the well can be imaged. See page 31, lines 21 to 23.

In regard to the means for individually controlling, there is included the X-Y translation system that allows the individual wells to be moved to the Z-robot pipette servicing as described beginning on page 24, line 17. The stepper motors of the X-Y stage moves each well to be dynamically controlled with the Z-robot pipette which controls the composition of medium bathing cells to add growth and/or quiescence factors automatically to individual wells based on cell behavior. Reservoirs for fresh and waste media, including individual cocktails of growth factors are provided to the pipette through small-volume syringe pumps. See page 31, lines 27-31.

In regard to the "means for determining", the claims already include the limitation that the determining means includes a computer. Furthermore, in regard to the determining means, there are two distinct general embodiments that applicant's utilize regarding the means for determining. There is the optics approach and there is the chemical approach.

In the optics approach generally, and referring to page 16, line 17, the determining mechanism (now means) preferably includes the imaging mechanism 212. Imaging mechanism 212 preferably comprises a computer 42. The computer 42 is connected to the imaging mechanism to receive images from the imaging mechanism. The imaging mechanism preferably comprises a microscope mechanism 220 which views the wells. The microscope mechanism is in communication with the computer 42. The imaging mechanism

preferably includes a camera mechanism 222 that takes pictures of the wells through the microscope mechanism and provides the pictures to the computer.

In regard to the chemical embodiment of the determining means, the determining means includes a diagnostic mechanism 234 in communication with a robotic mechanism 230 for ascertaining an occurrence of a biological event in the wells. See page 18, line 19. A robotic mechanism preferably has a z-robot pipet which can add, remove or change medium and transfer media from individual wells to supplemental analysis systems. See page 32, line 10. In an alternative embodiment, there can be multiple dispensing/aspiration tips so that dispenses to the wells or aspirations from the wells can be done in parallel for higher throughput. See page 35, line 8. Tissue culture medium or nutrients removed from individual tissue culture wells by the robotic arm can be deposited into a protein/nutrient analysis system. The culture medium can be analyzed by each of a variety of biochemical, immunochemical, biological and chemical assays that are listed beginning on page 37. See page 36, line 18. Thus, the determining means is either optics or chemically described.

It is respectfully submitted, that the means plus function language found in the claims is well supported, and has been identified in the specification. Furthermore, it is respectfully submitted that under patent law, the specification is considered in light of one skilled in the art. One skilled in the art here would be commensurate with the background of the inventors, two of which have their Ph.D.'s in engineering and were professors at Carnegie

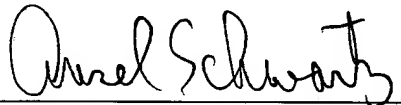
Mellon University at the time this application was filed. One skilled in the art would clearly be able to particularly point out in the specification the structure that supports the respective means plus function language. Accordingly, the rejection under 35 U.S.C. Section 112 is obviated.

The Examiner has indicated the claims are allowable subject to the 112 rejection.

In view of the foregoing amendments and remarks, it is respectfully requested that Claims 1, 47-64, 70, 74-81, 86-97, 99, 100, 103, 104 and 114-127, now in this application be allowed.

Respectfully submitted,

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